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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,187	12/30/2003	Oleg M. Efimov	024.0227 (03-0741)	9942
55397	7590	12/01/2006	EXAMINER	
INGRASSIA FISHER & LORENZ, P.C. 7150 E. CAMELBACK RD. SUITE 325 SCOTTSDALE, AZ 85251			PAK, SUNG H	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/749,187	Applicant(s) EFIMOV, OLEG M.	
	Examiner Sung H. Pak	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2006.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-19, 21-30 and 32-42 is/are pending in the application.
- 4a) Of the above claim(s) 25-28 and 32-37 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18, 19 and 21-24 is/are allowed.
- 6) ☒ Claim(s) 1, 6-8, 10, 12-14, 17, 29, 38 and 42 is/are rejected.
- 7) ☒ Claim(s) 2-5, 11, 15, 16, 30 and 39-41 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Applicant's amendment filed 9/15/2006 has been entered. Claims 1-8, 10-19, 21-30, 32-42 are pending, of which claims 25-28, 32-37 are withdrawn from consideration. All pending claims have been carefully reconsidered in view of the amendment. In response to the applicant's arguments for patentability of pending claims, the previous ground of claim rejection is hereby withdrawn. However, the examiner respectfully submits that the present application is not in condition for allowance, and a new ground of rejection is provided in this office action in view of a newly cited prior art.

Applicant's arguments for patentability have been carefully considered, but they are deemed moot in view of the new ground of rejection.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 6-8, 10, 12, 17, 29, 38, 42 are rejected under 35 U.S.C. 102(e) as being anticipated by Madsen (US 2004/0234192 A1).

Madsen reference discloses an optical device with limitations set forth in the claims, including: a plurality of fiber delay lines (each fiber delay line being represented by 'D<sub>1</sub>' + 'T<sub>1</sub>'),

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..., 'D<sub>N</sub>' + 'T<sub>N</sub>' in Fig. 2, OR 'D<sub>1</sub>', ... 'D<sub>N</sub>' in Fig. 3; see also paragraph 0021); a plurality of phase actuated switchers connecting said plurality of fiber delay lines ('21' Fig. 2, or '31' Fig. 3) wherein each of said phase actuated switchers of said plurality of phase actuated switchers simultaneously adjusts by the same amount for each phase actuated switcher a phase of an input signal to modulate said phase of said input signal (paragraph 0021);

wherein said plurality of phase actuated switchers connect said plurality of fiber delay lines in pairs between an input and an output of the delay line (Fig. 4); wherein the delay is the sum of the delays of the plurality of fiber delay lines (inherent characteristics of the variable delay mechanism in Figs. 2-4);

wherein a variable part of the fiber delay line comprises said plurality of fiber delay lines and said plurality of phase actuated switchers (paragraphs 0029-0030); said variable part allows digitally controlling a delay over the range from 0 to  $(2^{N+1}-1)\tau$  with a time resolution of  $\tau$ , wherein N is a number greater than or equal to zero and N+1 is the number of said fiber delay lines (paragraph 0030- Note: It is respectfully noted that pending claims of the present application contain "functional language" limitations (e.g. claim 8), wherein an "apparatus" claim is further limited by functions performed by the claimed apparatus.

As stated in MPEP §2114, "[w]hile features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function." *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). A claim containing "a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural

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limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). As such, while the functional language limitations are not ignored, such limitations are not given patentable weight, and the claimed limitations are anticipated if a prior art apparatus is capable of performing the claimed function. MPEP §2114).

Further, Madsen discloses a fiber coupler connected ('62' Fig. 6) to at least one of said plurality of fiber delay line ('63'+ '65') and a light phase adjustment ('64' Fig. 6) device connected to said fiber coupler;

wherein said phase actuated switchers includes mirrors (e.g. Figs. 2-4, 6-7).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen (US 2004/0234192 A1).

Madsen discloses an optical device as discussed above, except it does not explicitly teach the use of a spatial light modulator or a piezoelectric-stretcher as a light phase adjuster.

However, the use of a spatial light modulator or a piezoelectric-stretcher is well known and common in the art as a means for providing light phase adjustment. Spatial light modulator and piezoelectric-stretcher are known in the art as advantageous and desirable because they provide

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well-established and proven-effective ways of providing light phase adjustment with high precision. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Madsen to have spatial light modulator or piezoelectric-stretcher for providing light phase adjustment.

***Allowable Subject Matter***

Claims 18-19, 21-24 are allowed.

These claims are allowed for reasons discussed in the prior office action.

Claims 2-5, 11, 15-16, 30, 39-41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: none of the prior art fairly teaches or suggests, inter alia, an optical delay line that has phase actuated switchers that simultaneously adjusts by the same amount for each phase actuated switcher a phase of an input signal to modulate the phase of the input signal, further utilizing long and short optical fiber differential delay lines, as claimed and recited in the present application.

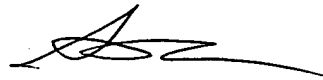
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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The examiner can normally be reached on Monday- Friday, 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571)272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Sung H. Pak  
Primary Patent Examiner  
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